Claims 5, 6, 11 and 12 have been rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Chater-Lea (U.S. Patent No. 5,822,314) in view of Ward (U.S. Patent No. 5,663,958). For the reasons set forth below, Applicants respectfully request reconsideration of these rejections as none of the prior art of record renders the presently claimed invention obvious and unpatentable.

Claim 5 has been rejected by the Examiner as being obvious and unpatentable over Chater-Lea in view of Ward. Claim 5 is directed toward a frame transmitting device. The frame transmitting device includes a frame number adder for adding a frame number to a frame. A transmitter is used to transmit the frame with the frame number. The frame number that is added to the frame by the frame number adder is determined according to an expected delay time of the frame. In other words, the frame transmitting device is able to adjust the added number to compensate for an expected delay, whereby reliability of frame synchronization in the receiver is improved.

Chater-Lea discloses a method and system for compensating time lag in encryption processing performed between a base station and a mobile station in carrying out TDMA communication through a relay device, where the time lag is attributable to the relay device. In particular, as disclosed in Fig. 5, the base station generates a first timing signal by adding a frame number corrresponding to a timeslot number using a clock of the base station and then transmits the first signal to the mobile station. Upon receipt of the first signal, the mobile station transmits a second timing signal to the base station that includes the frame number.

After the base station receives the second timing signal including the frame number, the base station compares a frame number corresponding to the time at which the second timing signal is received with information on timing included in the second timing signal. In other words, a frame number corresponding to the time at which the first timing signal is transmitted. *See* Column 7, lines 7-10. If the frame numbers do not coincide with each other, the base station calculates an amount of offset for transmission to the mobile station. Upon receipt of the amount of offset transmitted, the mobile station adjusts the timing of reception of subsequent frames by the same amount of offset, thereby ensuring correct timing in the encryption process. *See* Column 7, lines 22-25.

Ward discloses a method and system for adaptively selecting a length of a burst signal in order to increase an uplink radio capacity available to a user in a TDMA communication system in which a base station and a mobile station are employed. Specifically, as illustrated in Fig. 4, the base station estimates a time of reception of a TDMA frame transmitted by the mobile station. Next, the base station obtains the difference between the actual time of reception and the estimated time required to find a synchronization error. Obtaining an error in this manner is

repeated to accumulate a number of synchronization errors. The base station then changes the length of the burst signal transmitted by the mobile station by using a probability density function obtained from the cumulative sum of the synchronization errors, which is determined on the basis of the relation between actual synchronization errors and the probability density function.

Applicants respectfully traverse the Examiner's rejection of independent claim 5 on the grounds that the claimed invention is rendered obvious by Chater-Lea in view of Ward. Chater-Lea discloses a frame numbering system and a transmitter for transmitting TDMA frames to and from a mobile station and a base station. However, as properly pointed out by the Examiner, Chater-Lea does not disclose adding frame numbers to the frame where the frame numbers are determined according to an expected delay time of the frame.

In order to properly support a rejection of independent claim 5 under 35 U.S.C. §103(a), the Examiner must provide a combination of prior art references that disclose, teach or suggest a system that determines frame numbers according to an expected delay time of the frame. Contrary to the Examiner's assertion, Ward clearly does not disclose, teach or suggest determining frame nubmers according to the expected delay time of the frame. Ward clealry does not disclose, teach or suggest adding frame numbers to TDMA frames let alone determining the numbers that are added to the frames according to the expected delay time of the frame.

It is also important to note that the system disclosed in Chater-Lea relates to a TDMA communication system. Specifically, a TDMA frame is comprised of timeslots generated by dividing a series of bits into portions, each of which is to be multiplied to generate a multiframe or hyperframe. *See* Fig. 2 and Column 3, lines 44-55. Applicants' invention is not limited to application in a TDMA communication system. Specifically, a frame of the present invention transmitted on one channel is comprised of a data packet(s) generated discretely in time and other data such as a header. As such, it is important to note that a frame number of the present invention attached to each of the frames to be transmitted is discrete and thus different from a slot number (a frame number of TDMA), which is added sequentially to each timeslot.

As for the offset that is calculated in Chater-Lea, it is also important to note that an offset employed in Chater-Lea is used for adjusting timing reception of a series of bits on a receiving device. In other words, timing reception for the subsequent frames is changed uniformly. Further, it is apparent from Fig. 5 that Chater-Lea does not disclose that a frame number attached to a frame to be transmitted is adjusted by a transmitting device (base station) in accordance with an expected time delay of communication. The transmitting device of Chater-Lea simply calculates the offset, namely, the difference between the transmission frame number

and the number of the received frame number. In the present invention, an offset is calculated using frame numbers and is used for adjusting timing reception for each packet, not for all subsequent frames as disclosd in Chater-Lea. Furthermore, one skilled in the art would not have been motivated to adjust a frame number on the basis of an expected time delay.

A cumulative amount of synchronization errors is obtained on the basis of an expected delay time. However, the essential feature disclosed by Ward is to change a length of a burst signal (transmitted signal) in accordance with a communication delay to avoid conflicting signals being transmitted from mobile stations in a TDMA communication system. As such, it should be noted that Ward is not pertinent to frame synchronization and therefore cannot properly be used to render the presently claimed invention obvious and unpatentable. It is readily apparent that Ward does not perform frame synchronization on the basis of an expected delay time. For all of the foregoing reasons, Applicants' respectfully request the Examiner to remove the rejection of independent claim 5 as none of the prior art of record renders the claimed invention obvious.

Claim 6 has been rejected by the Examiner as being obvious and unpatentable over Chater-Lea in view of Ward. Claim 6 discloses a frame receiving device that includes a receiver for receiving a frame having a frame number. A frame synchronizer is used for executing a frame synchronization adjustment referring to the frame number. The frame synchronizer executes the synchronization adjustment according to an expected delay time required for the frame to reach the frame synchronizer.

In Chater-Lea, upon receipt of an offset value, a mobile station performs processing on a received signal only if the value is not zero. If the value is zero, the mobile station does not peform any processing. *See* Column 7, lines 17-27. It is also worth noting that an offset value is transmitted at the beginning of a communication between the mobile station and the base station independent of a data signal. In addition, after determination of the offset, encryption processing is performed indiscriminately on a subsequent series of frames using the determined offset.

In the present invention, a transmitting device determines a frame number for a frame in accordance with timing of transmission of the frame and adds the number to the frame. The frame receiving device controls synchronization independently for each frame using a frame number added to each frame in order to deal with a case where a communication delay deviates in time with the effect that differing frames may suffer from differnt communication delays. For these reasons, and the reasons set forth above with respect to independent claim 5, Applicants fail to see how Charter-Lee in combination with Wards discloses, teaches or suggests the invention set forth in independent claim 6. As such, Applicants respectfully request the

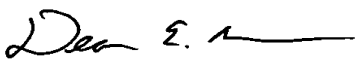
Examiner to withdraw the rejection of independent claim 6 as the prior art of record clearly does not render the presently claimed invention obvious.

Claim 11 has been rejected by the Examiner as being obvious and unpatentable over Chater-Lea in view of Ward. Independent claim 11 includes all of the limitations of independent claim 5 and for the reasons set forth above with respect to independent claim 5, Applicants believe that independent claim 11 is allowable in its present form. As admitted by the Examiner, none of the prior art of record discloses updating the expected delay time when a real delay time exceeds the expected delay time. As such, Applicants respectfully request reconsideration and allowance of independent claim 11.

Claim 12 has been rejected by the Examiner as being obvious and unpatentable over Chater-Lea in view of Ward. Independent claim 12 includes all of the limitations of independent claim 6 and for the reasons set forth above with respect to independent claim 6, Applicants believe that independent claim 11 is allowable in its present form. Once again, as admitted by the Examiner, none of the prior art of record discloses updating the expected delay time when a real delay time exceeds the expected delay time. To that end, Applicants respectfully request reconsideration and allowance of independent claim 12 as well.

Applicants believe that all of the pending claims of the present application are allowable in their present form and respectfully requests the Examiner to issue a Notice of Allowance so indicating.

Respectfully submitted,



Dean E. McConnell
Attorney Reg. No. 44,916

BRINKS HOFER GILSON & LIONE
One Indiana Square, Suite 2425
Indianapolis, Indiana 46204
Telephone: 317-636-0886
Facsimile: 317-634-6701